WISER RCOFs knowledge exchange workshop

Addis Ababa (Ethiopia), 23 march 2018

Seasonal forecasting process at regional/national ~ AGRHYMET experience ~

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AGRHYMET Regional Center - CILSS
Niamey (Niger)
www.agrhymet.ne

Presentation of the AGRHYMET Regional Center

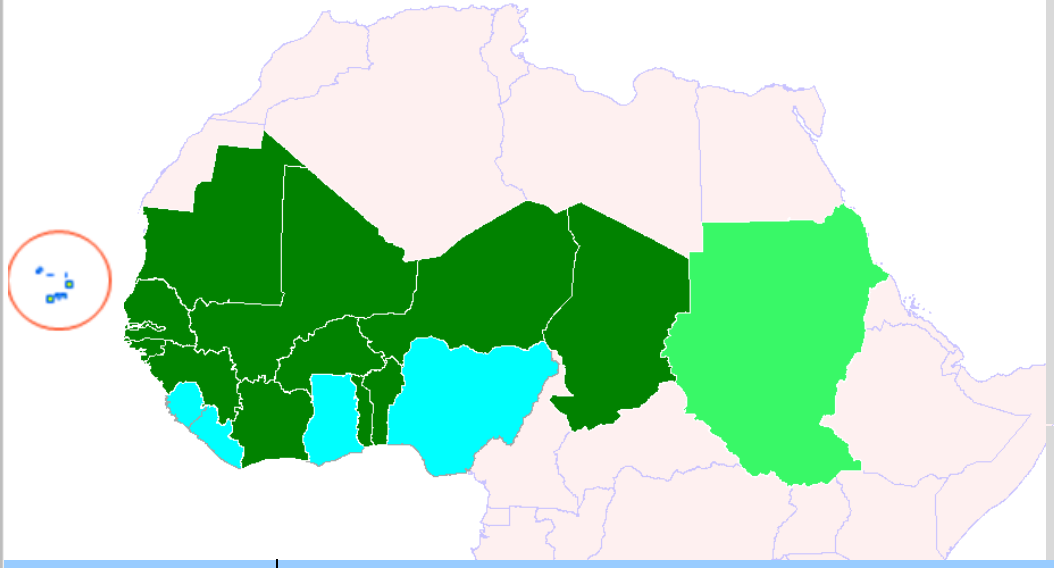
AGRHYMET: AGRonomy, HYdrology and METeorology

Created in 1974, after the drought 1970's

Institution specialized in:

- **Production of operational information** for decision-making in the fields of agrometeorology, hydrology, meteorology and food security.
- **Training** (diploma and short training on TS, Engineers and Masters)

14 member countries: but all the products are for the 17 west-african and ECOWAS countries



Benin	Mali
Burkina Faso	Mauritanie
Cap Vert	Niger
Côte d'Ivoire	Senegal
Gambie	Tchad
Guinée	Togo
Guinée-Bissau	Soudan
Ghana	Nigeria
Sierra Leone	Liberia

Mission — **Investing in the quest for food security, water control and the fight against desertification for a new ecological balance in the Sahel**

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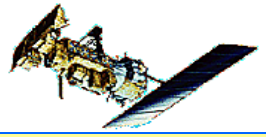
Some missions contributing to the mandate of CILSS

- Collection, processing and data management at regional scale
- Applied research in the area of agrohydromet and GIS
- Develop and disseminate information at regional level of policy makers: food security, early warning on hydroclimatic extremes, etc.
- Training and transfer of operational tools, methods and know-how in climatology, agrometeorology, hydrology, plant protection, geomatics, remote sensing.

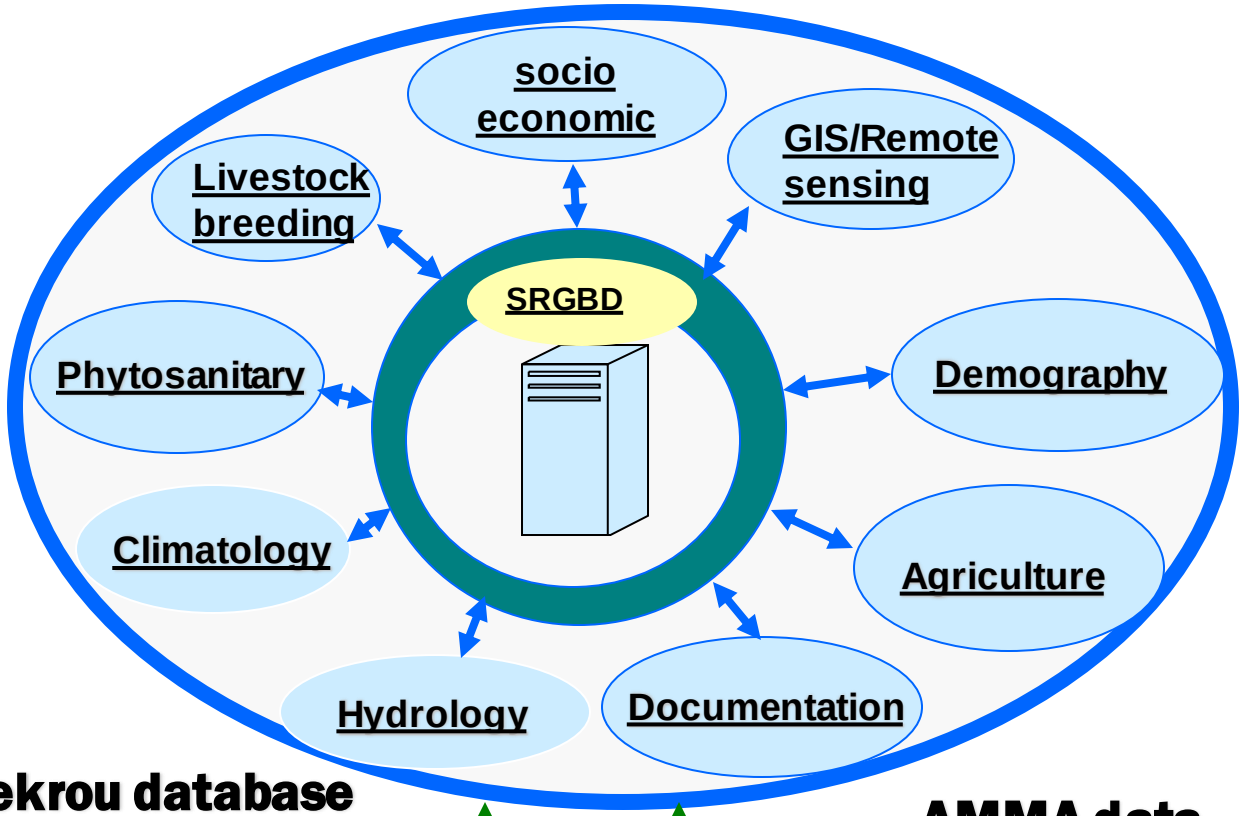
Regional database system (Hydromet network data, Remote sensing and Survey data)



satellite data flow

Countries, pilot sites

fields data,



Mekrou database

Biophysical and socio-economic data

AMMA data

AMMA database mirror

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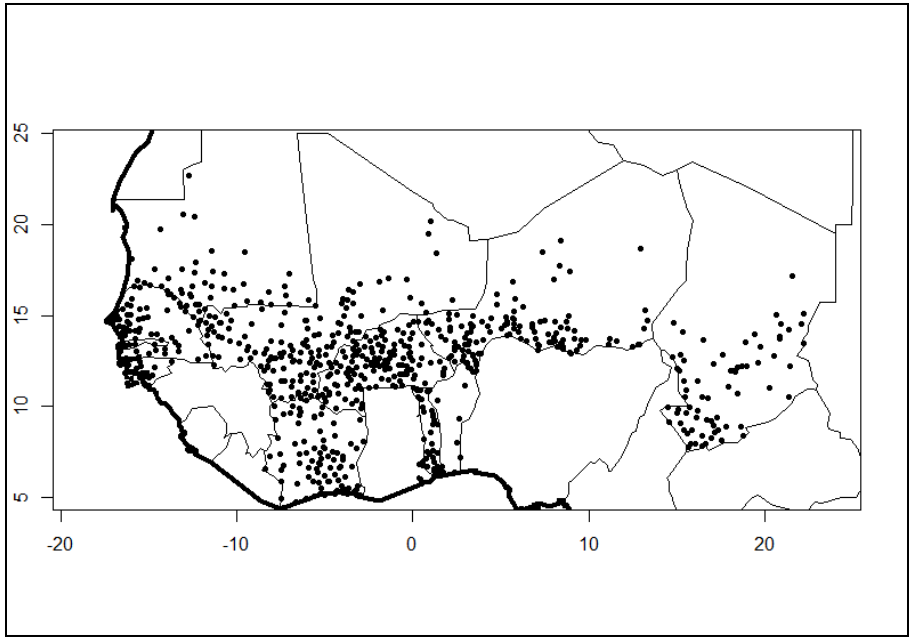
Rainfall and river discharge measurement networks

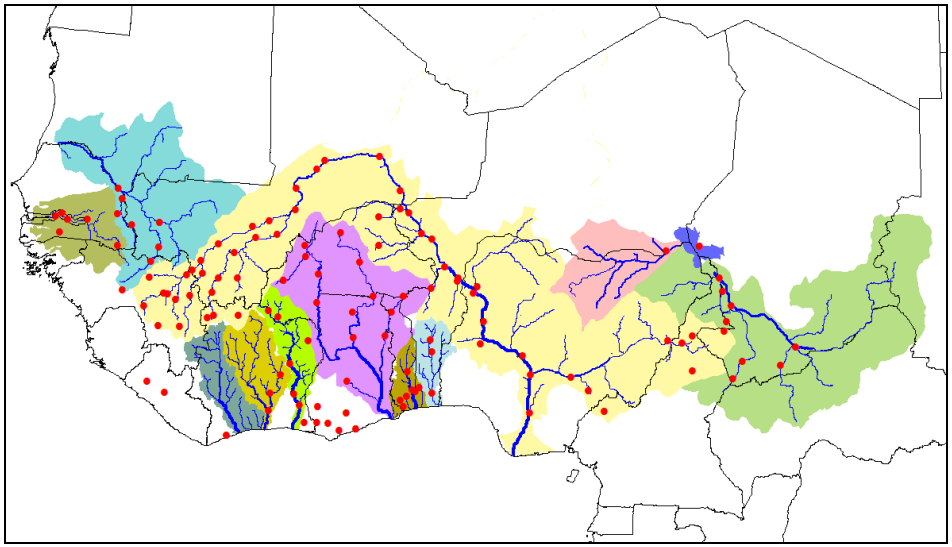


Around 1500 rain gauges (1915 – 2017)

CLIDATA and CLIMBASE for climatological data management

Around 250 hydrometric stations (1917 – 2017)

HYDROMET for hydrological data management



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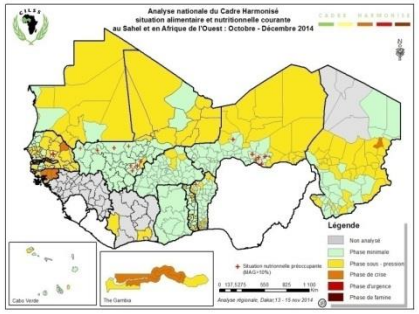
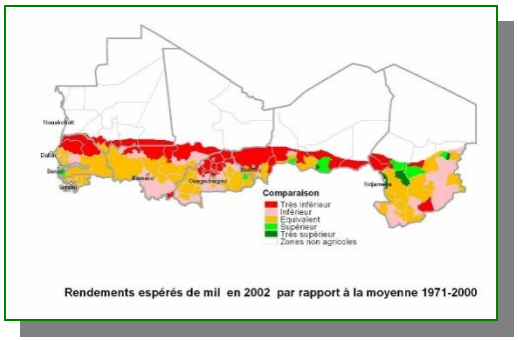
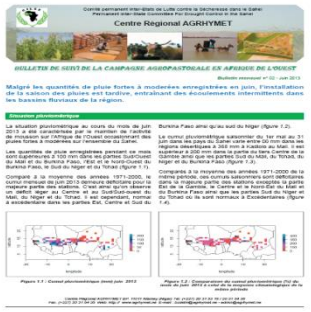
Some information and decision support products

- **Products of season monitoring:**
  - ✓ **Seasonal forecasts of agro-hydro-climatic characteristics**
  - ✓ **Climate monitoring: rainfall, surface T °, ITD,**
  - ✓ **Environmental monitoring: surface water, bush fires,**
  - ✓ **Monitoring of pastoral resources: herbaceous biomass, pastures, vegetation index,**
  - ✓ **Agricultural monitoring: crop water needs, yield forecast,**
  - ✓ **Phytosanitary monitoring.**
- **Cadre Harmonisé for identifying and analyzing food insecure areas and populations.**





Rendements espérés de mil en 2002 par rapport à la moyenne 1971-2000



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Seasonal forecasts of agro-hydro-climatic characteristics

1. Evolution

- **1998 - 2010**
  - Rainfall JAS
  - River basin flows
- **2011: New approach**
  - Rainfall JJA and JAS
  - Agrometeorological characteristics of the rainy season
    - *Onset date*
    - *Ending date*
    - *Length of dry spells*
  - Hydrological characteristics of the rainy season
    - *River basin flow*
    - *Onset date of the rivers flow*

All these characteristics are compared to the current normal 1981-2010

Seasonal forecasts

2. Methodology

❑ Pre-Forum

- Three working groups (Climatology, Agrometeorology and Hydrology)
  + Deasaters risks reduction Agencies
- Analysis and data processing
- Production of forecasts
- Forecast consolidation (plenary session, discussions)
- Development of consensus forecasts
- Advices and recommendations to users

❑ Forum

- Communication of the prospects of the season
- Communication of advices and recommendations
- Exchanges

❑ Post-Forum

- Dissemination
- Monitoring and updating

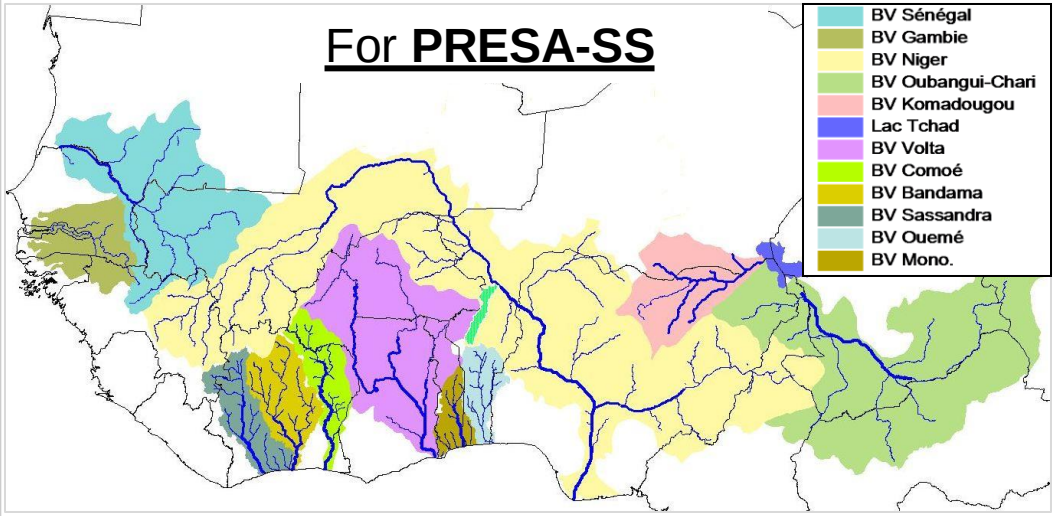
3. Actors and periods

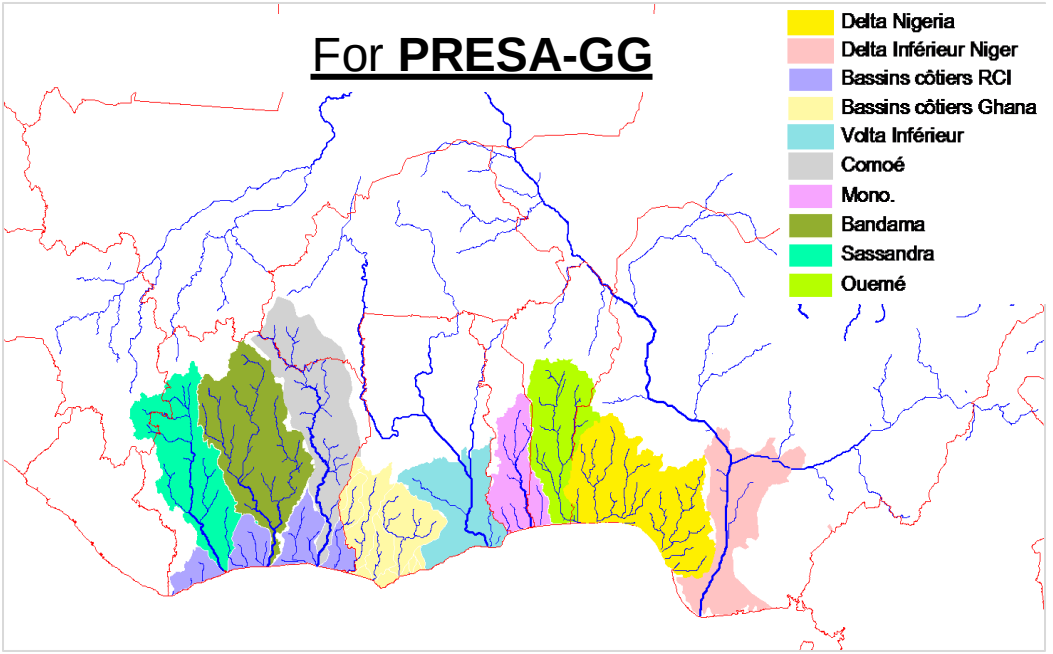
AGRHYMET in collaboration with ACMAD and its partners (IRI, UK Met Office, etc.)

- **PRESAGG: PREvision SAisonnière pour les pays du Golfe de Guinée:**
  - At the beginning of March,
  - Bring together the SNMH, the representatives of the DRRs of the 7 Gulf of Guinea countries and the 2 rivers basins organizations (ABN, ABV).

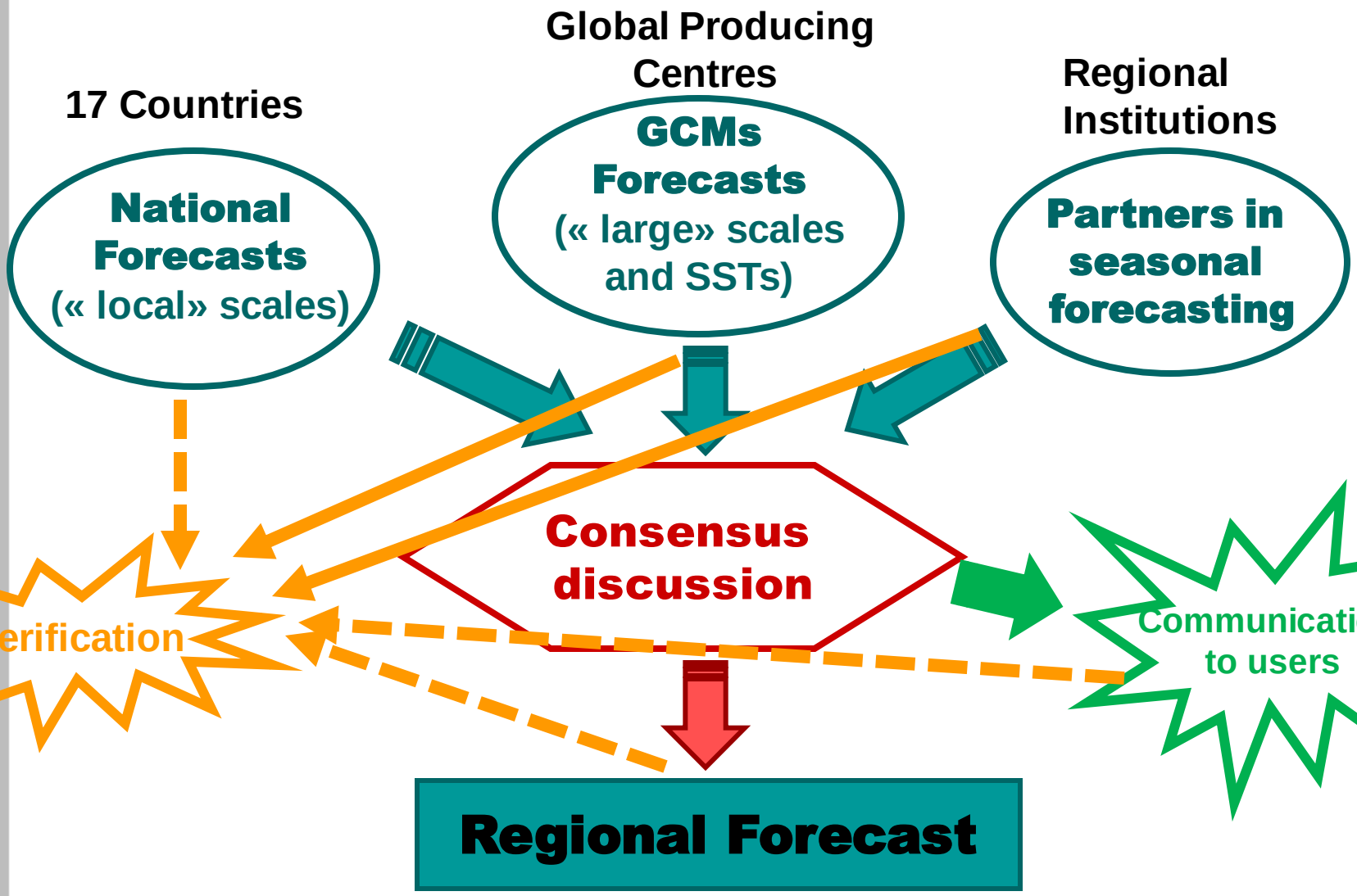
- **PRESASS: PREvision SAisonnière pour la zone Sahélo-Soudanienne:**
  - At the beginning of May,
  - Forum brings together all the SNMHs of the CILSS/ECOWAS countries, the 5 rivers basins organizations (ABN, ABV, CBLT, OMVG, OMVS) and the representatives of the DRRs.

Basins concerned by seasonal forecasts





Seasonal forecasts



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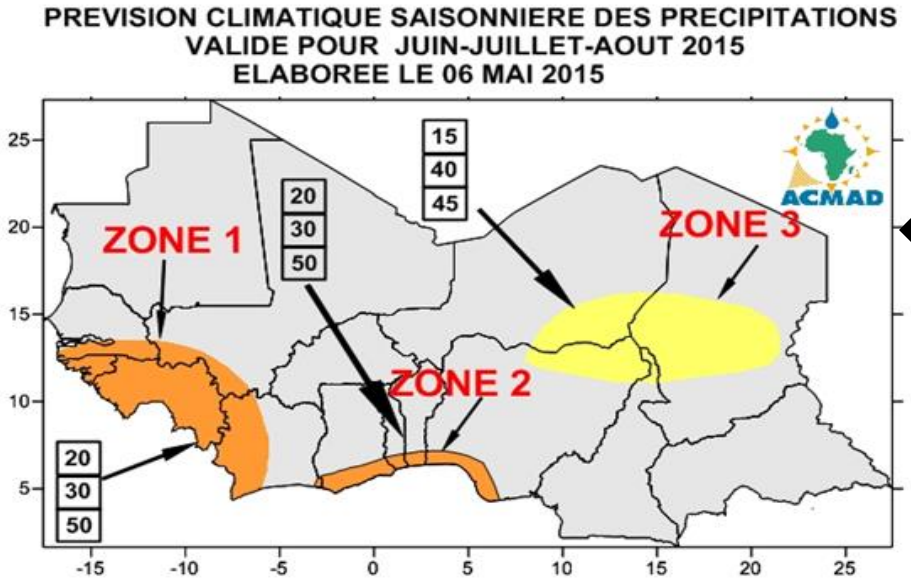
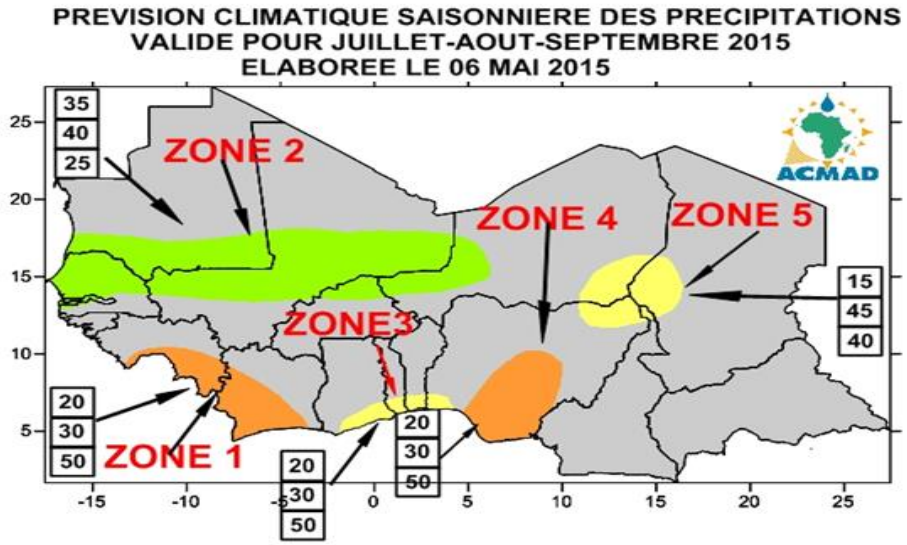
Some information and decision support products from forecast forums

Prospects of rainfall



Rainfall JJA 2015

Rainfall JAS 2015



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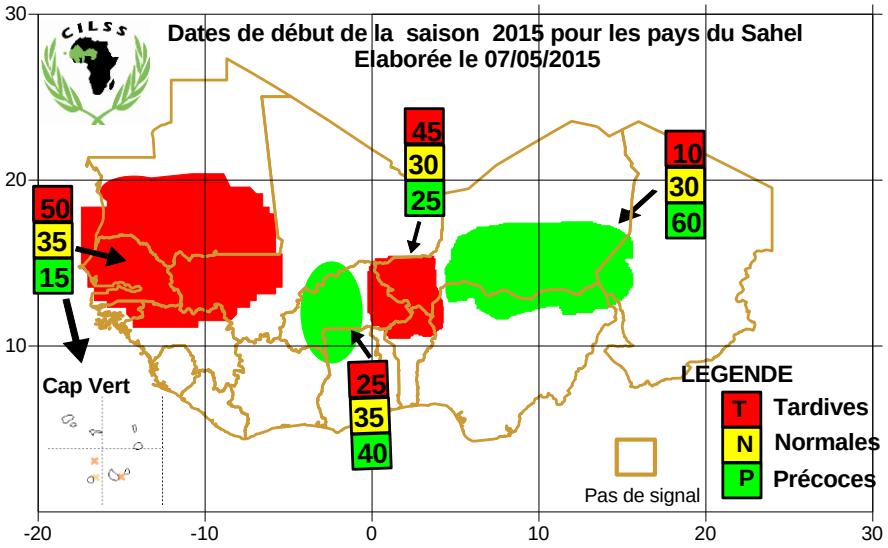
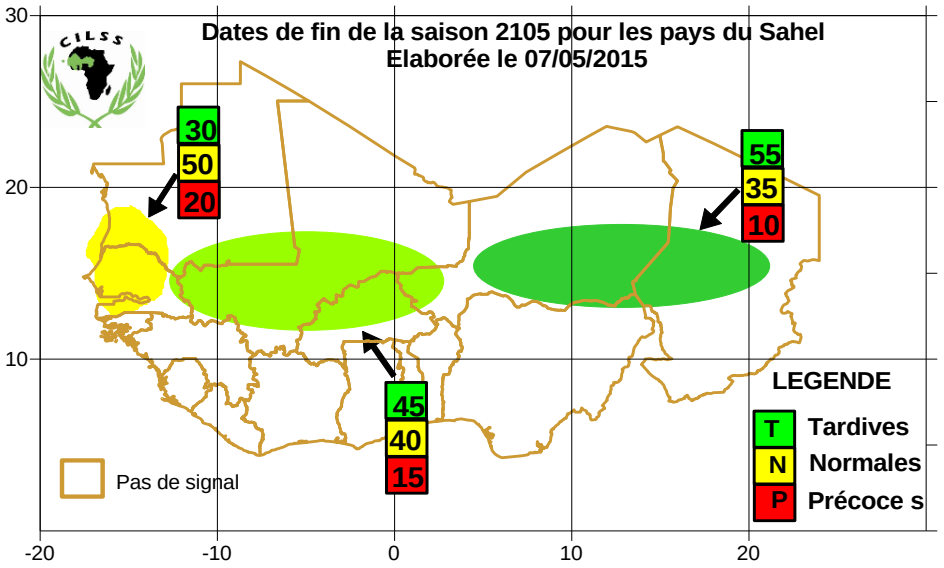
Prospects of onset/ending date



Onset date rainy season 2015

Ending date rainy season 2015



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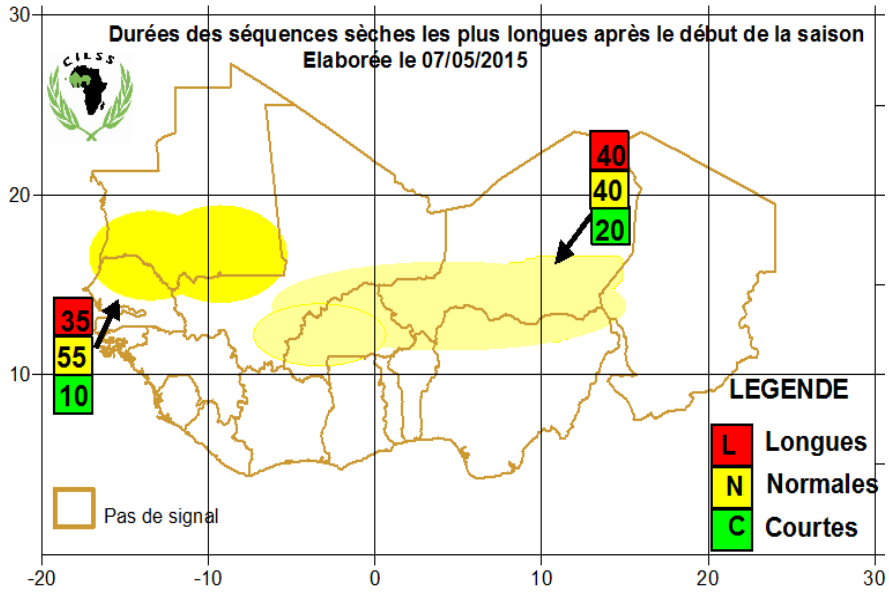
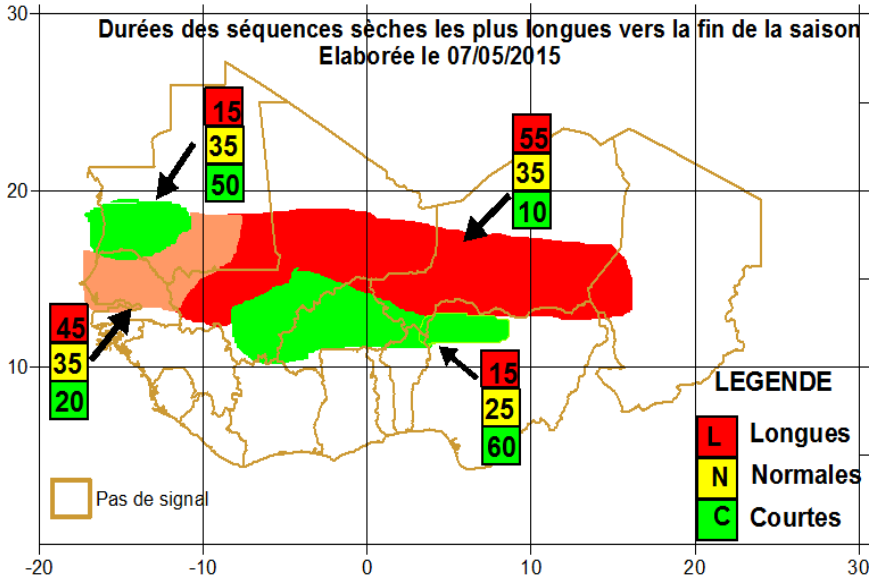
Prospects of the length of dry spells



at the **beginning** of rainy season 2015

at the **end** of rainy season 2015



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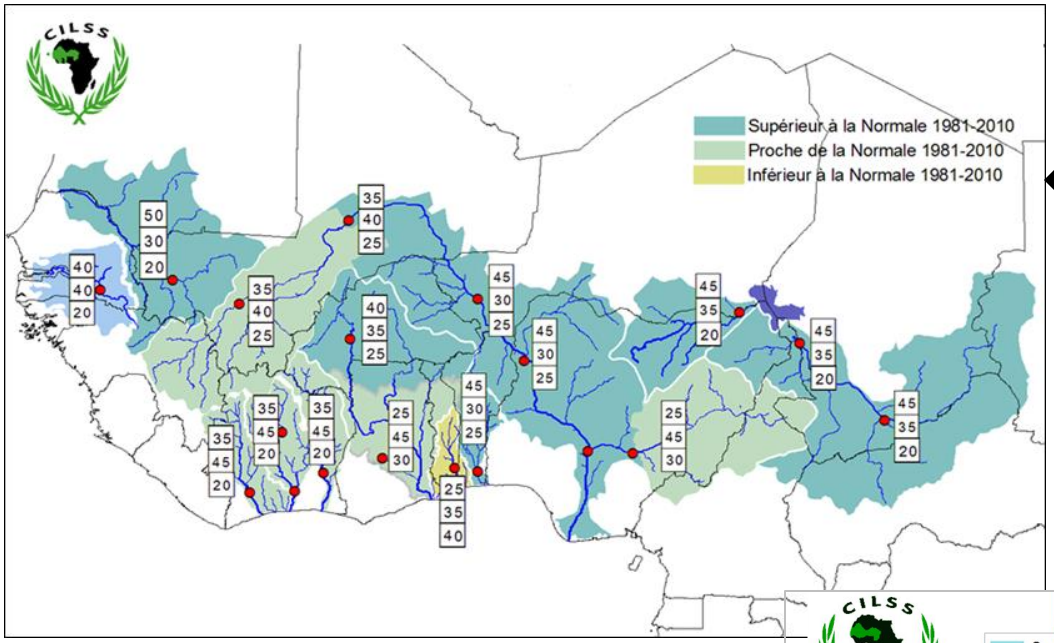
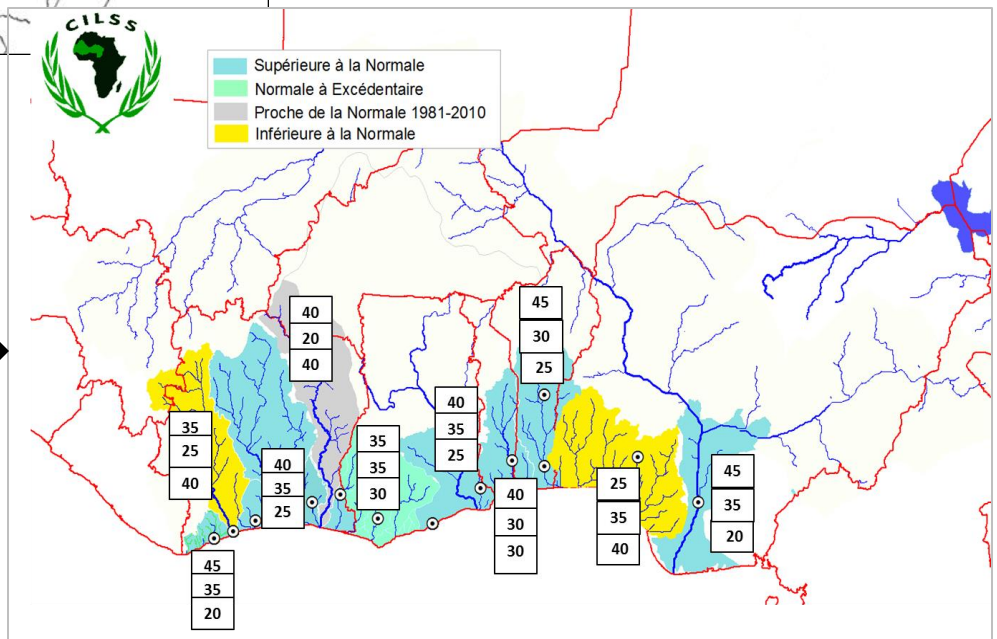
Prospects of flows



PRESA-SS 2017

PRESA-GG 2018



Dissemination and communication

To Users: farmers, water resources managers, NGOs, DRR, etc.

- **Presse release**
- **Special Bulletin**
- **Mailing list**
- **AGRHYMET website : www.agrhymet.ne**
- **New approach**
  - Communication with users trough some pilots initiatives : CCAFS, ISACIP, ACCIS, ONGs
  - Local radio, farmers, local decisions makers, local technical services, etc.

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Communication of seasonal forecast with some national services



Communication of seasonal forecast with end-users



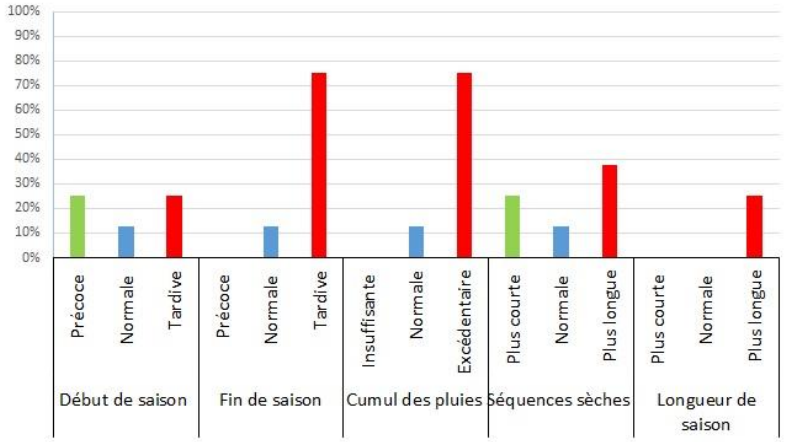



Verification at national Levels

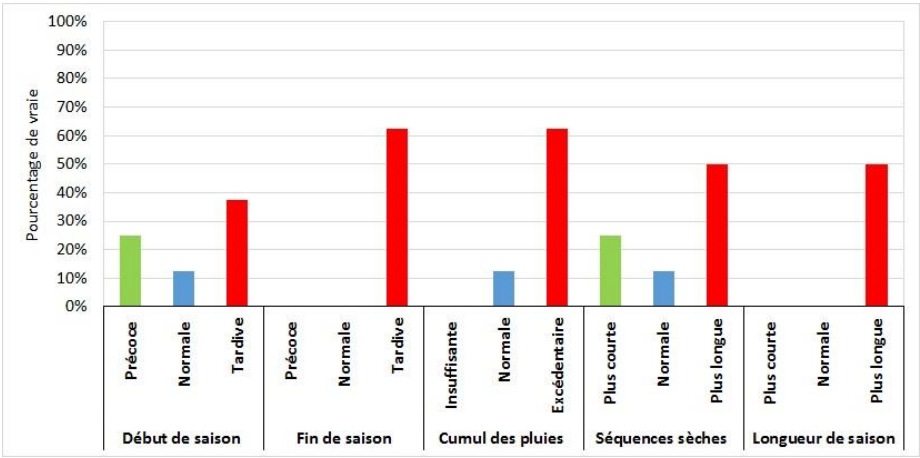
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	STN	SAVE	KANDI	PARAKOU	MALANVII	BANIKOAR	BEMBERE	DJOUGOU	KOUANDE	NATITING	NIKKI	TANGUIETA	TCHAOUR	BETEROU	KALALE	Okpara	OUESSE	
2	LAT	8.03	11.13	9.35	11.87	11.3	10.2	9.7	10.33	10.32	9.93	10.62	8.87	9.2	10.3	9.47	8.5	
3	LON	2.47	2.93	2.6	3.4	2.43	2.67	1.67	1.68	1.38	3.2	1.27	2.6	2.27	3.38	2.73	2.42	
4	1981	117	114	114	187	108	122		144	109	121	114		119		114	125	
5	1982	101	97	105	188	123	111		104	137	126	174		129	105	107	97	
6	1983	101	134	136	152	144	123		124	125	130	138		127	134	141	124	
7	1984	99	113	122	157	136	122		101	106	117	106		99	108	123	114	
8	1985	131	136	122	127		152	122	104	89	140	171	117	132	131	91	75	
36	2013	116	101	82	161	166	156	85	119	107	92				128	104	121	
37	2015	77	162	159	184	164	140		125	177	135			131	129	136	125	
38																		
39																		
40	Tercile Inferieur	97,71	124,57	106,91	143	115,48	119,46	101,81	108,82	107,57	128,4	117,64	100	101,25	115	106,82	103,16	
41	Tercile superieur	113,28	135,14	120,74	169	138,12	125,82	110	127,28	116,42	144	135,82	108,56	114,5	134,36	122,82	115,32	
42																		
43	OBSERVATION	P	T	T	T	T	T		N	T	N			T	N	T	T	
44																		
45	PREVISION	P	T	T	T	T	T		T	T	T			T	T	T	T	
46																		
47	VERIFICATION	V	V	V	V	V	V		F	V	F			V	F	V	V	
48																		
49																		
50		NOMBRE DE VRAI	10															
51																		
52		NOMBRE DE FAUX	3															
53																		
54																		
55							AU TOTAL											
56																		
57																		
58							NOMBRE DE VRAI	10			POURCENTAGE VRAI	77%						
59																		
60							NOMBRE DE FAUX	3			POURCENTAGE FAUX	23%						
61																		
62							NOMBRE DE STATIONS	13										

				EVALUATION DATE DE DEBUT				
STN	LAT	LON	2015	Tercile Inferieur	Tercile superie	OBSERVATION	PREVISION	NOTE
SAVE	8.03	2.47	77	98	113	P	P	V
KANDI	11.13	2.93	162	125	135	T	T	V
PARAKO	9.35	2.6	159	107	121	T	T	V
MALANV	11.87	3.4	184	143	169	T	T	V
BANIKO	11.3	2.43	164	115	138	T	T	V
BEMBE	10.2	2.67	140	119	126	T	T	V
DJOUGO	9.7	1.67		102	110			
KOUAND	10.33	1.68	125	109	127	N	T	F
NATITIN	10.32	1.38	177	108	116	T	T	V
NIKKI	9.93	3.2	135	128	144	N	T	F
TANGUI	10.62	1.27		118	136			
TCHAOU	8.87	2.6		100	109			
BETERO	9.2	2.27	131	101	115	T	T	V
KALALE	10.3	3.38	129	115	134	N	T	F
Okpara	9.47	2.73	136	107	123	T	T	V
OUESSE	8.5	2.42	125	103	115	T	T	V

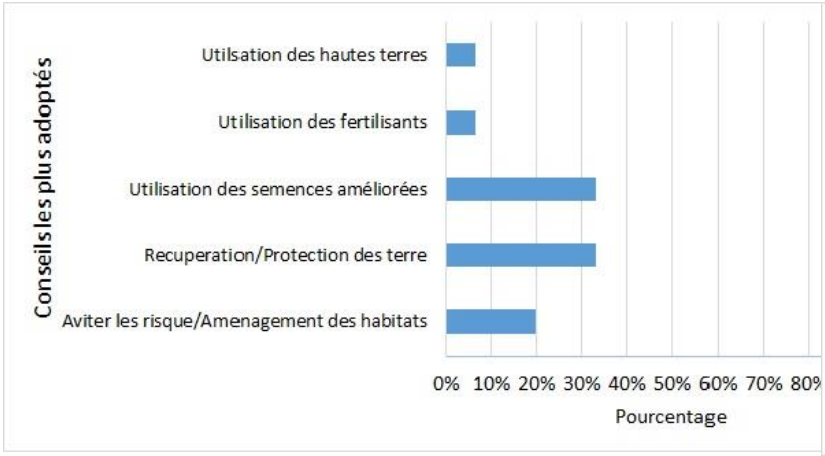
Verification and Evaluation of seasonal forecast by users



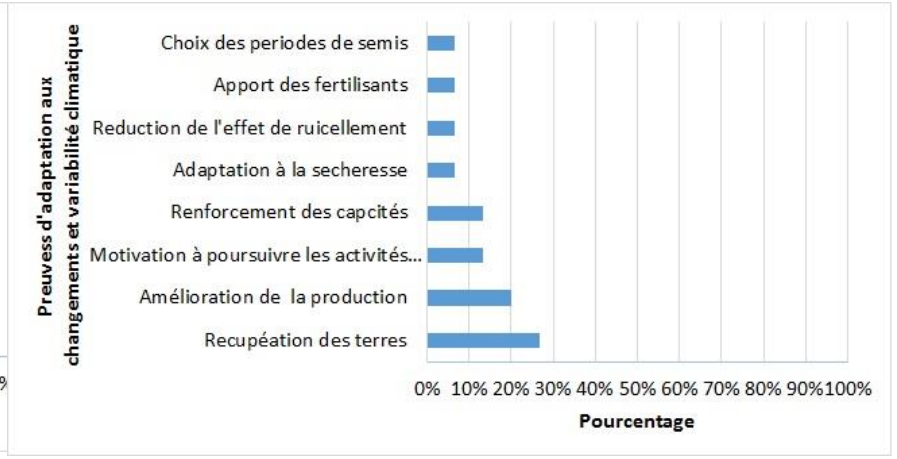
Received information



Evaluation at communities levels

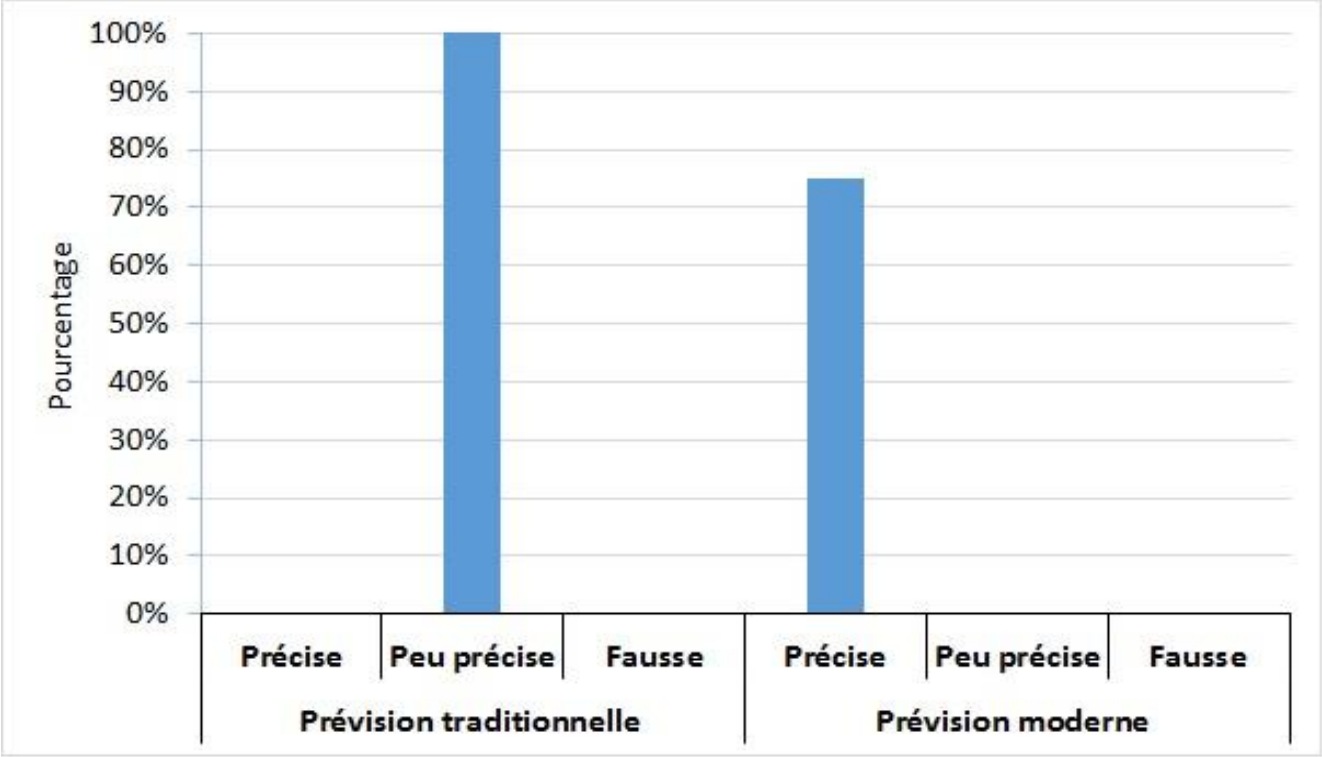


Advises use by farmers



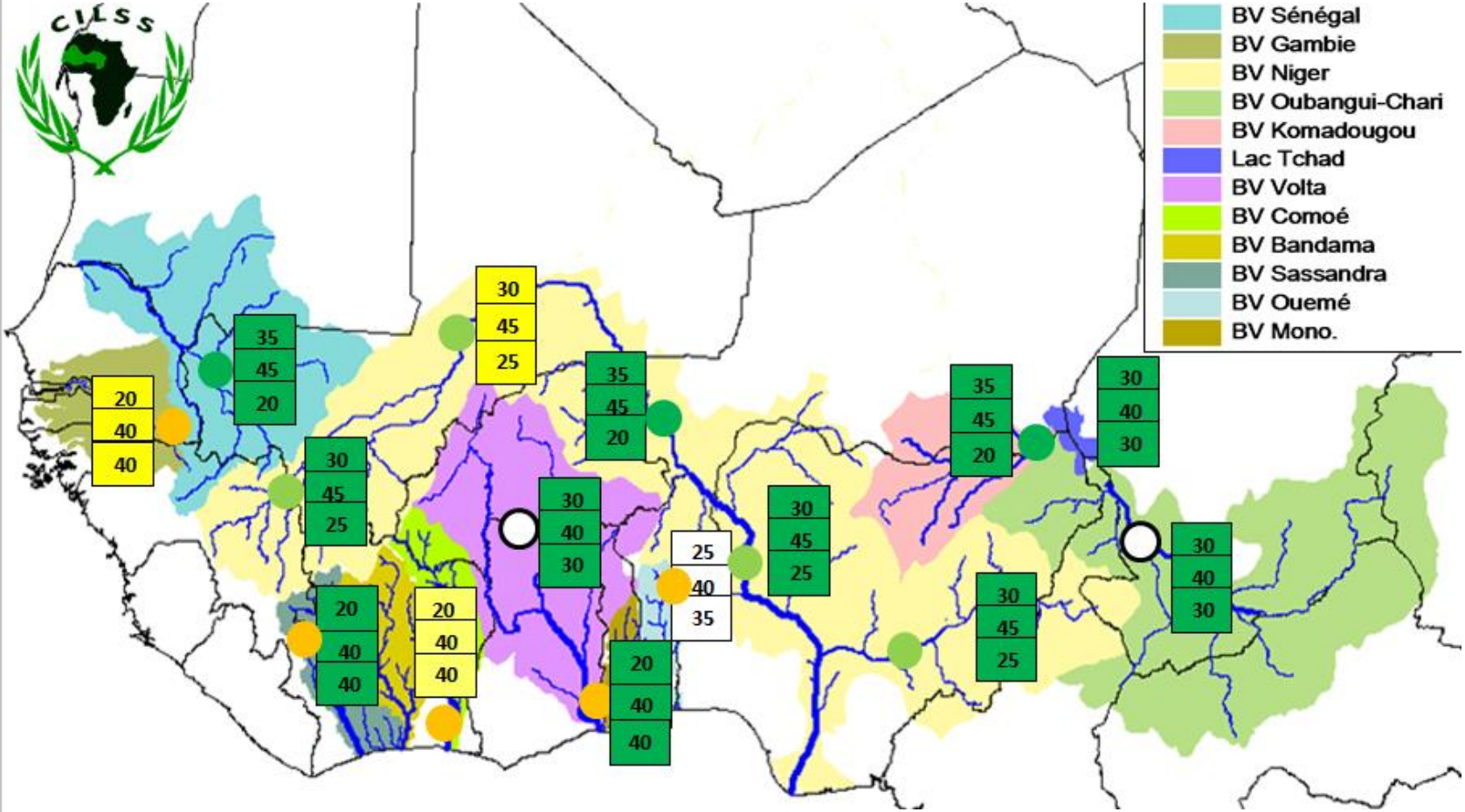
Impacts of the advices

Perception of communities about seasonal forecasts



Verification and Evaluation of seasonal forecast by users

PRESA-SS 2015



From 2011 to 2015, the mean skill on all concerned basins is 83%

Challenges

- **Use of seasonal forecast in impacts models**
  - **SARRA-H**
  - **HYPE**
- **Strengthening observation networks**
- **Downscaling of the seasonal forecast**
- **Fundraising (for forums at regional level and dissemination at national level)**

Role of AGRHYMET in FANFAR

WP3: Forecasting and alert ICT system

Task3: *Information derivation*

WP4: Sustainability through capacity, support, dialogues and business development

Task4: *Dialogues to facilitate exploitation and sustainable uptake of the system in West Africa*

WP2: User needs, tests and behavioural responses

Technical validation of all functionalities

Task1: *Co-design flood forecasting and alert system and services based on user needs*

Task2: *Test forecasting and alert system in practical local flood management, and technical validation*

WP4: Durabilité à travers la capacité, le soutien, les dialogues et le développement des affaires

Task2: *Provide support for OHFA system users*

WP1: Gestion, diffusion et communication

Task2: *Dissemination and communication*

WP3: Forecasting and alert ICT system

Task1: *Access key input data sources*

Task2: *Select, adapt, and deploy hydrological models on the OPCP, and test scalability*

Task4: *Distribution channels for automatic information delivery to end-users*

Task5: *Operate and adapt the H-TEP Operational Production Cloud Platform*

WP4: Sustainability through capacity, support, dialogues and business development

Task1: *Develop human capacity*

Task3: *Define a business plan for further exploitation*

WP1: Management, dissemination and communication

Task4: *Translation*

Have an operational tool for the benefit of the people of West Africa

Thank you
for your attention

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